

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
7 October 2004 (07.10.2004)

PCT

(10) International Publication Number
WO 2004/085631 A3

(51) International Patent Classification⁷: C12N 5/06, 15/11

(21) International Application Number:
PCT/CA2004/000456

(22) International Filing Date: 26 March 2004 (26.03.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/458,863 28 March 2003 (28.03.2003) US
60/526,385 1 December 2003 (01.12.2003) US

(71) Applicants (for all designated States except US): MOUNT SINAI HOSPITAL [CA/CA]; 600 University Avenue, Room 970, Toronto, Ontario M5G 1X5 (CA). SON-NYBROOK AND WOMEN'S COLLEGE HEALTH SCIENCE CENTER [CA/CA]; 2075 Bayview Avenue, Toronto, Ontario M4N 3M5 (CA).

(72) Inventors; and

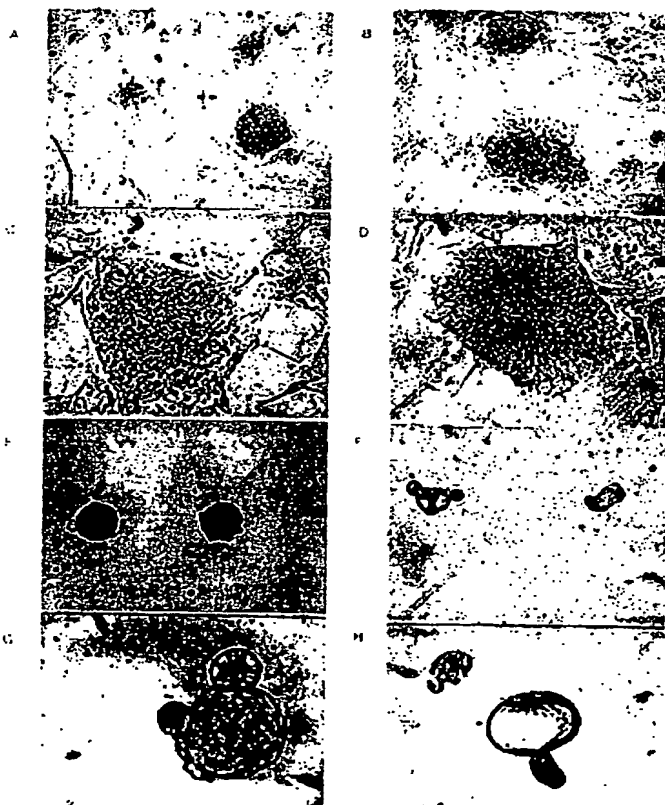
(75) Inventors/Applicants (for US only): ROSIC-KABLAR, Suzana [CA/CA]; 53 Thorncliffe Park Drive, Toronto, Ontario M4H 1L1 (CA). HOUGH, Margaret R. [CA/CA]; 218 Airdrie, Toronto, Ontario M4G 1M8 (CA). NAGY, Andras [CA/CA]; 50 John Street, Apartment 1009, Toronto, Ontario M5V 3T5 (CA).

(74) Agents: KURDYDYK, Linda et al.; McCarthy Tetrault, 66 Wellington Street West, Suite 4700, P.O. Box 48, Toronto Dominion Bank Tower, Toronto Dominion Centre, Toronto, Ontario M5K 1E6 (CA).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,

[Continued on next page]

(54) Title: CANINE EMBRYONIC STEM CELLS



(57) Abstract: The invention relates to canine embryonic stem cells, methods of cultivation and propagation of the cells, and production of differentiated cells. The embryonic stem cells may be obtained by isolating a canine embryo, culturing the embryo in the presence of a feeder layer and one or more proliferation agent, removing a blastocyst outgrowth, and culturing the outgrowth in the presence of a fresh feeder layer.

WO 2004/085631 A3

BEST AVAILABLE COPY



PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) **Date of publication of the international search report:**
24 March 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA2004/000456

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N5/06 C12N15/11

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, MEDLINE, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	<p>HOUGH MARGARET R ET AL: "Generation of canine embryonic stem cells for use in animal models of human single gene disorders." BLOOD, vol. 102, no. 11, 16 November 2003 (2003-11-16), page 150b, XP002296801 & 45TH ANNUAL MEETING OF THE AMERICAN SOCIETY OF HEMATOLOGY; SAN DIEGO, CA, USA; DECEMBER 06-09, 2003 ISSN: 0006-4971 abstract</p> <p style="text-align: center;">----- -/--</p>	1-36

☒ Further documents are listed in the continuation of box C.

☐ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the International filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the International filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- *G* document member of the same patent family

Date of the actual completion of the International search

17 September 2004

Date of mailing of the International search report

24. 01. 05

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Nichogiannopoulou, A

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA2004/000456

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,A	<p>DENNING CHRIS ET AL: "New frontiers in gene targeting and cloning: Success, application and challenges in domestic animals and human embryonic stem cells." REPRODUCTION (CAMBRIDGE), vol. 126, no. 1, July 2003 (2003-07), pages 1-11, XP002296813 ISSN: 1470-1626 the whole document</p>	1
A	<p>SZABO CSILLA I ET AL: "Human, canine and murine BRCA1 genes: Sequence comparison among species" HUMAN MOLECULAR GENETICS, OXFORD UNIVERSITY PRESS, SURREY, GB, vol. 5, no. 9, 1996, pages 1289-1298, XP002174577 ISSN: 0964-6906 the whole document</p>	1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2004/000456

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-36

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.